METHOD AND SYSTEM FOR INTERACTIVE TEACHING AND PRACTICING OF
LANGUAGE LISTENING AND SPEAKING SKILLS
Inventors: David Dunlap, Derek M. Koch, Douglas P. Whetter
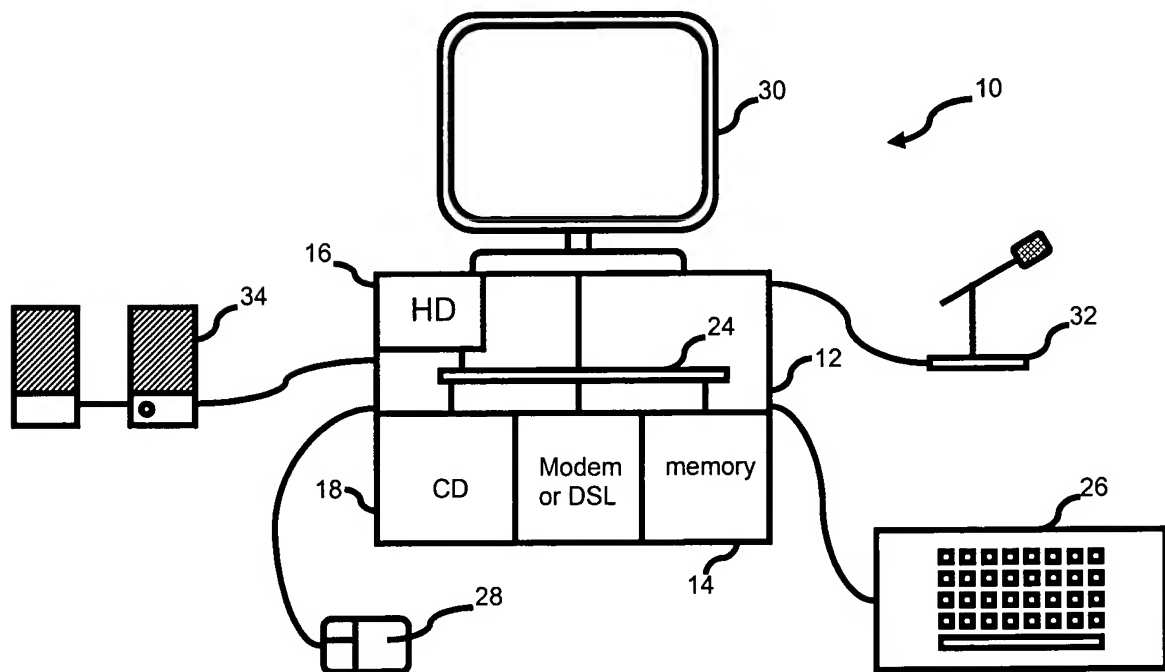Attorney Docket No.: C004 100104

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FIG. 1

METHOD AND SYSTEM FOR INTERACTIVE TEACHING AND PRACTICING OF
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"Learning interface" module:
1.) voice box 2.) learning interface Tools
3.)Standard human interface tools and 4.)Help

— 34

Speech recognition module:
1.) processing voice input
2.) Adapting to speaker difference

— 36

Interaction engine:
1.) Conversation trees 2.)word library
3.) meaning

— 38

Game engine:
1.) physical environment 2.) physical control
3.) behavior control

— 40

Standard administrative controls:
Language update controls 2.) scenario update controls
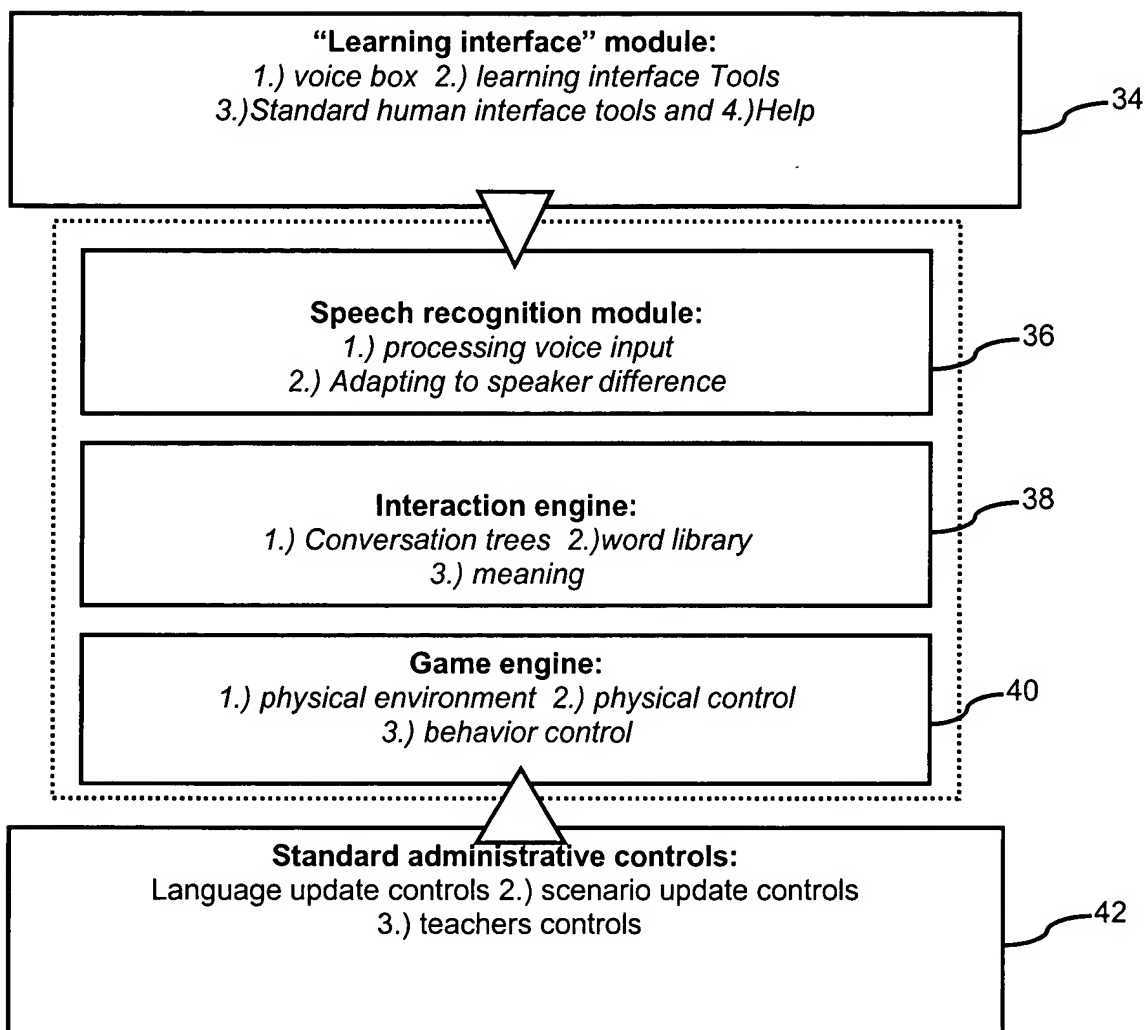3.) teachers controls

— 42

FIG. 2

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Learner 1
    UserName
    Demographics
        Name
        Age Range
        Sex
    Speech Recognition
        Reference to Voice Model
        Substitution Error List
    Learning
        Language
        Teacher ID
        Last Lesson Number
        Last Area Number
        Last Location
        Setup Preferences
        Lessons
            Lesson 1
                Character 1
                    Points
                    Duration
                    Nodes Skipped
                Character 2, etc.
            Lesson 2, etc.
Learner 2, etc.

FIG. 3

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Language Dialect 1
    Name of Dialect
    Reference to Vocabulary Word Models
    Reference to Language Model
    Speech Recognition Substitution Error List
    Language dialect-specific graphics (surfaces, dress)

    Environment Areas
        Area 1
            Coordinates
            Start Location
            Objects
                Object 1
                    Name
                    Graphics
                    Coordinates
                    Reference to Animation Details
                    Reference to Voice Recording
                Object 2, etc.
            Characters
                Character 1
                    Name
                    Graphics
                    Coordinates
                    Script
                        Node 1
                          Lesson Points
                          Character Prompt
                              Text
                              Reference to Voice Recording
                          Expected Learner Response 1
                              Text
                              Grammar Statement
                              Next Node ID
                          Expected Learner Response 2, etc.
                      Node 2, etc.
                Character 2, etc.
        Area 2, etc.
    Lessons
        Lesson 1
            Area I
                Character R
                Character S, etc.
            Area J, etc.
        Lesson 2, etc.
Language Dialect 2, etc.

FIG. 4

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Inventors: David Dunlap, Derek M. Koch, Douglas P. Whetter
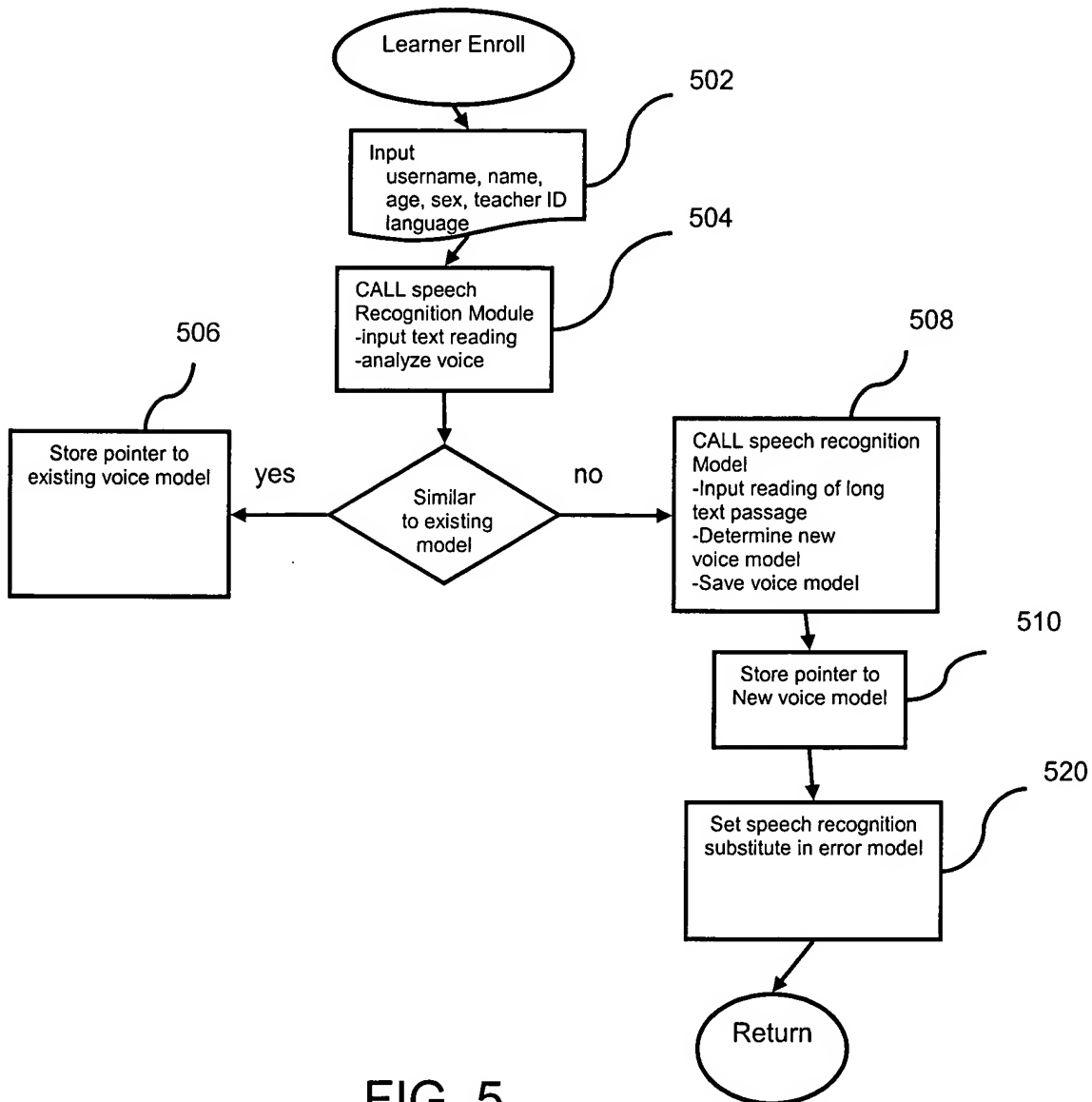Attorney Docket No.: C004 100104

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FIG. 5

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Commence
learning session

Load learner
data — 602

Load teacher
lesson plan — 604 ← Teacher lesson
planning

CALL speech
recognition module — 606 ← Vocabulary word models
Language model
learner's voice model

Resume
or next

608 → Resume from
Saved location-
Load environment

610 → Next lesson

Self
directed or no
lesson

yes → 614 Choose lesson area-
Go to chosen area
Start lesson

no → 612 Go to lesson
start location

position

FIG. 6

METHOD AND SYSTEM FOR INTERACTIVE TEACHING AND PRACTICING OF
LANGUAGE LISTENING AND SPEAKING SKILLS
Inventors: David Dunlap, Derek M. Koch, Douglas P. Whetter
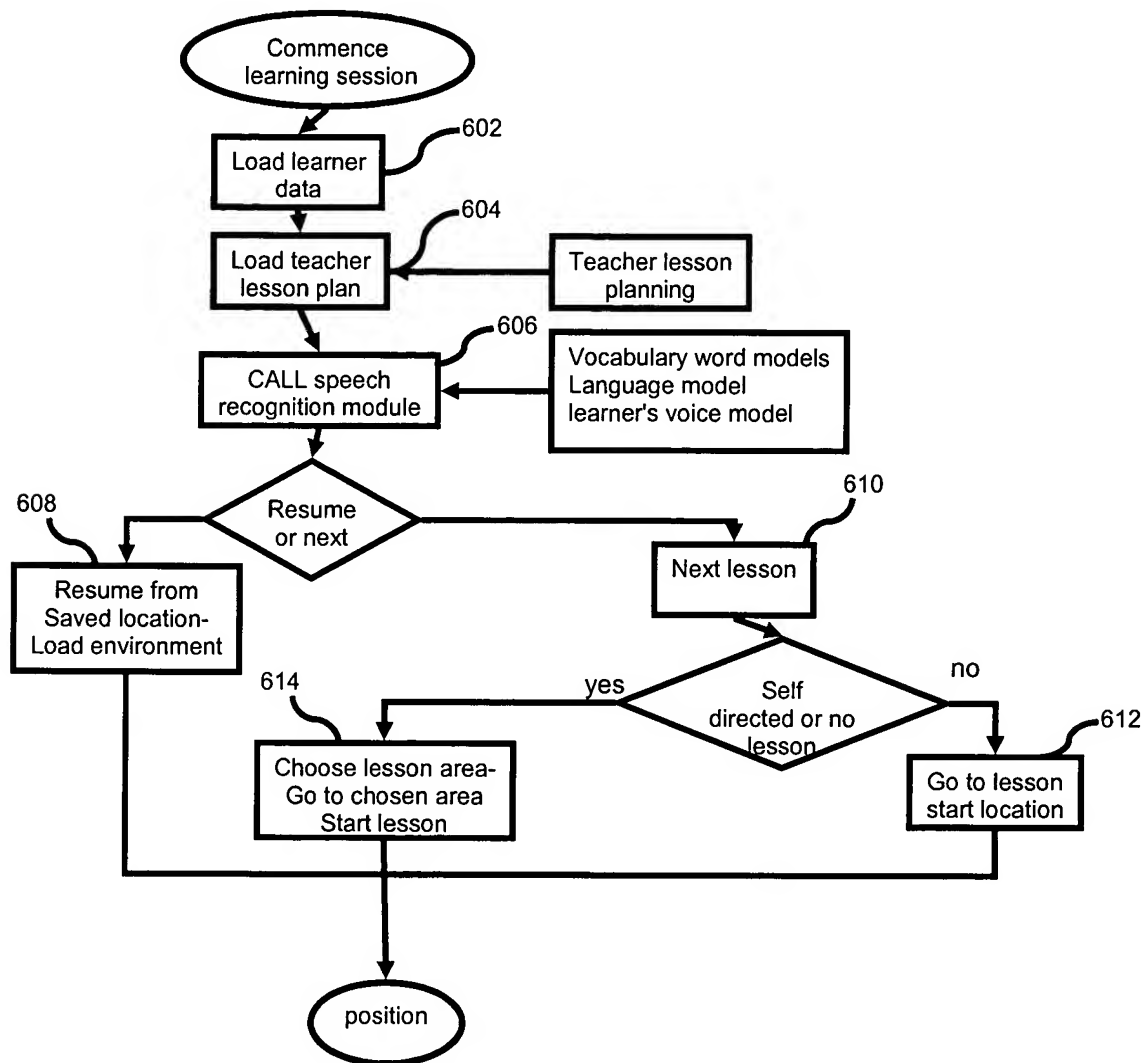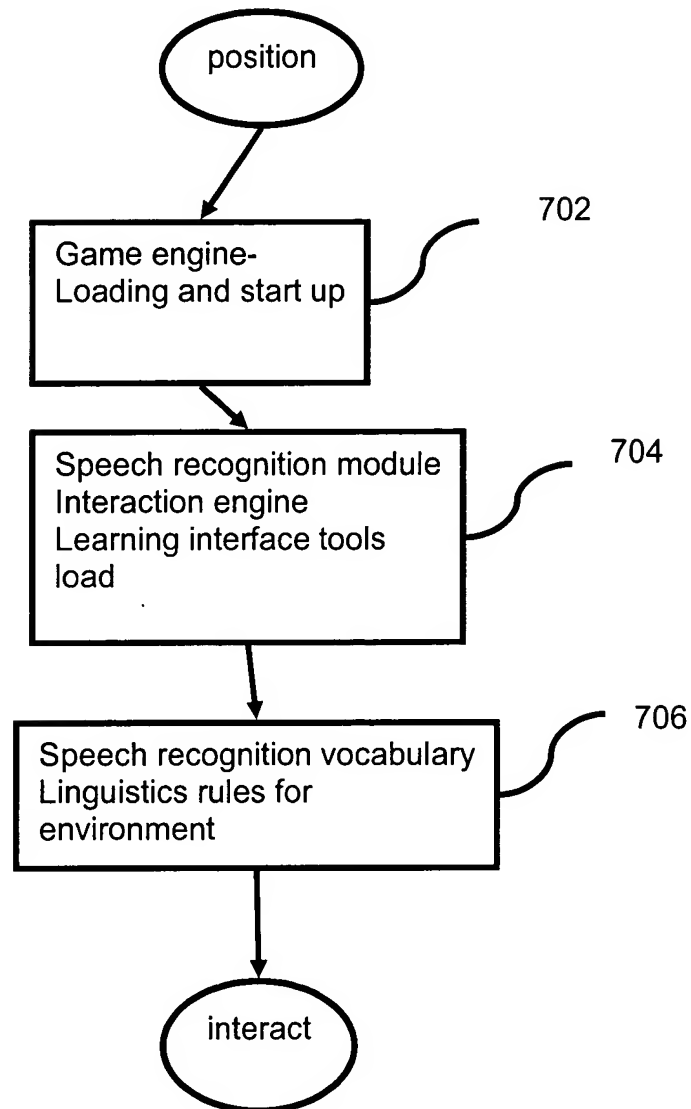Attorney Docket No.: C004 100104

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position

Game engine-
Loading and start up   702

Speech recognition module
Interaction engine
Learning interface tools
load   704

Speech recognition vocabulary
Linguistics rules for
environment   706

interact

FIG. 7

METHOD AND SYSTEM FOR INTERACTIVE TEACHING AND PRACTICING OF
LANGUAGE LISTENING AND SPEAKING SKILLS
Inventors: David Dunlap, Derek M. Koch, Douglas P. Whetter
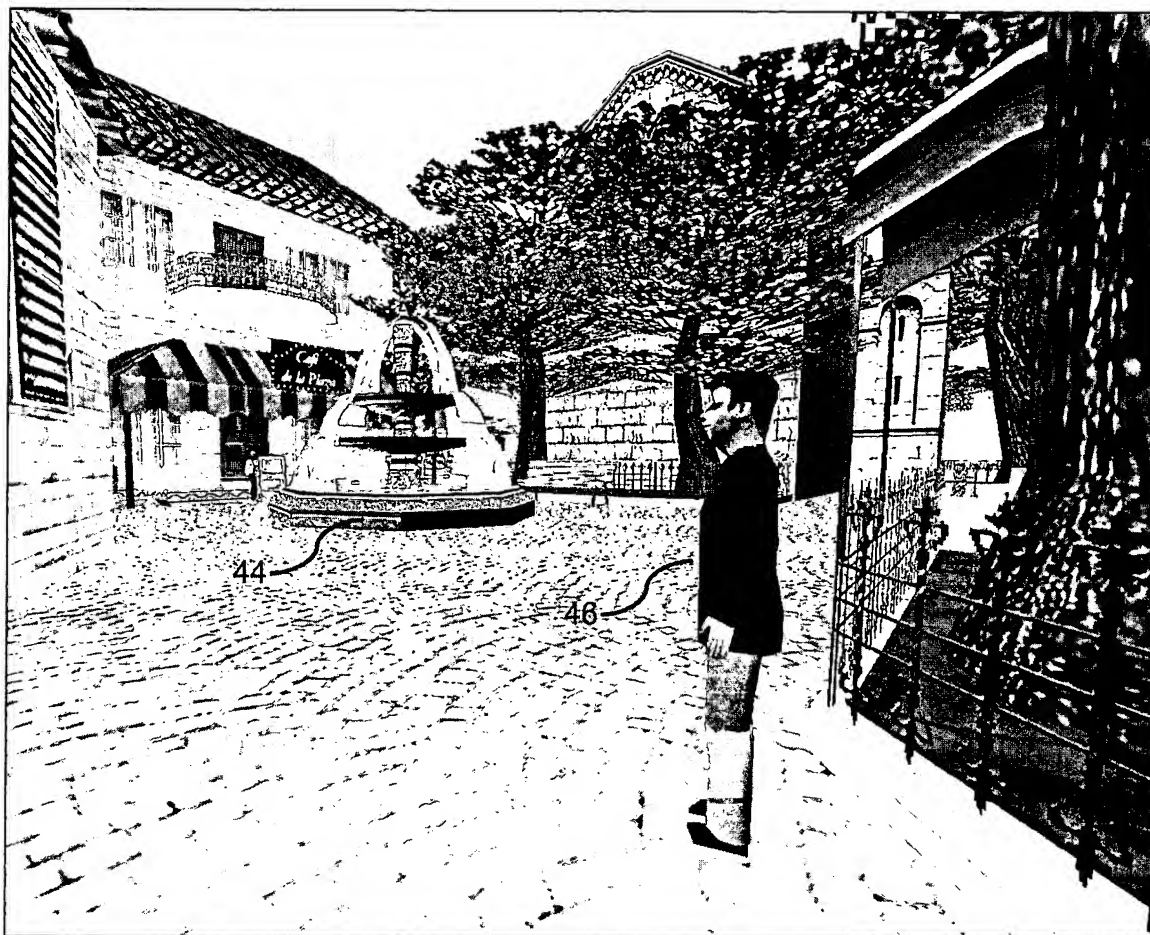Attorney Docket No.: C004 100104

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FIG. 8

METHOD AND SYSTEM FOR INTERACTIVE TEACHING AND PRACTICING OF
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FIG. 9a

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Inventors: David Dunlap, Derek M. Koch, Douglas P. Whetter
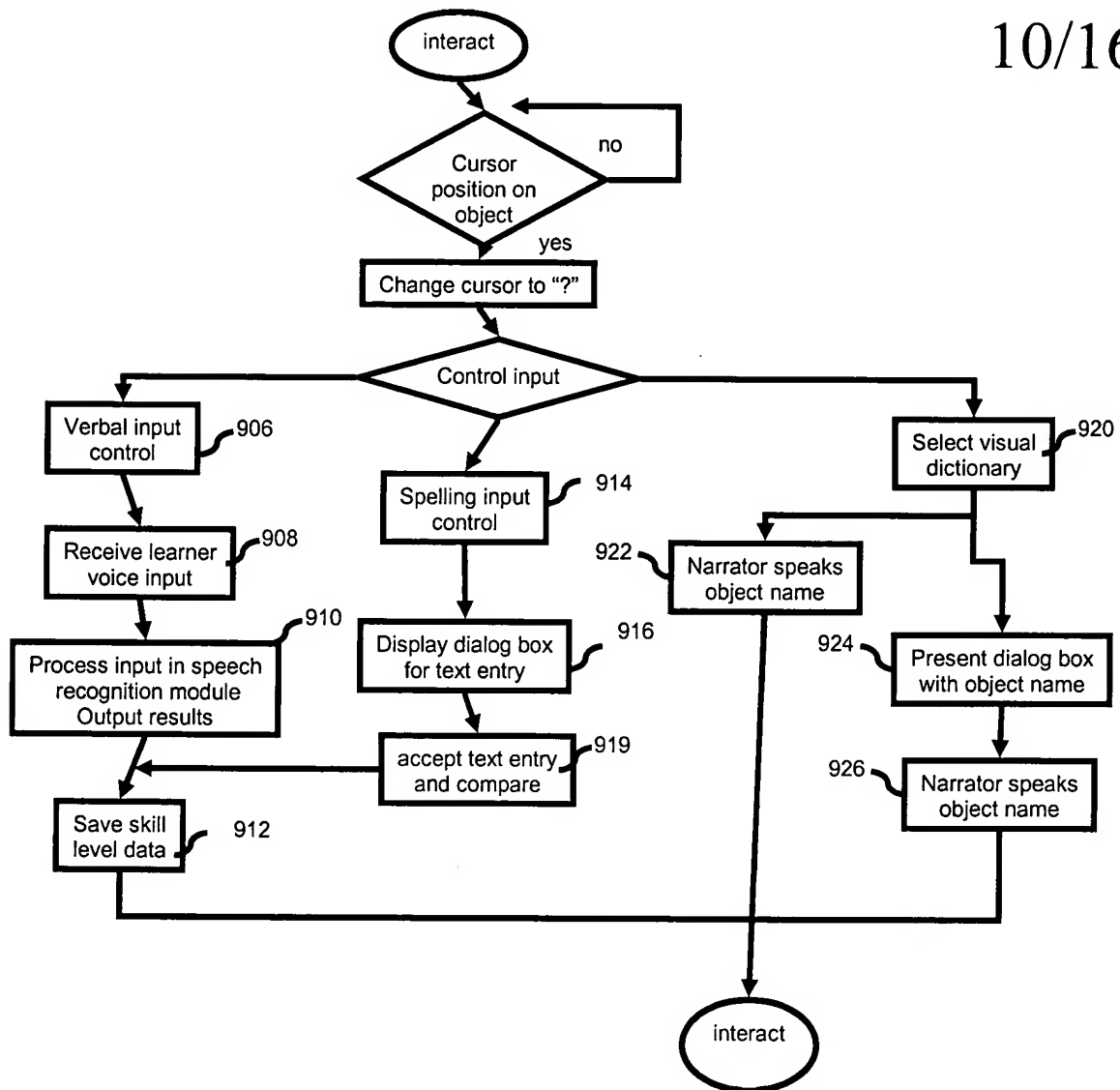Attorney Docket No.: C004 100104

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FIG. 9b

METHOD AND SYSTEM FOR INTERACTIVE TEACHING AND PRACTICING OF
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Interact

1002
Motion
To proximity of
character

no

yes

Scenario variables-
Character,
Time of day
Learner data,
randomization

Access prompt library — 1004

Select prompt — 1006

Output character voice — 1008

Start response clock — 1010

Conversation sequence — 1012

Record conversation
duration in skill level — 1014

Record skipped nodes
in skill level data — 1016

Record selected response from
VoiceBox in skill level data — 1018

Record indistinguishable input
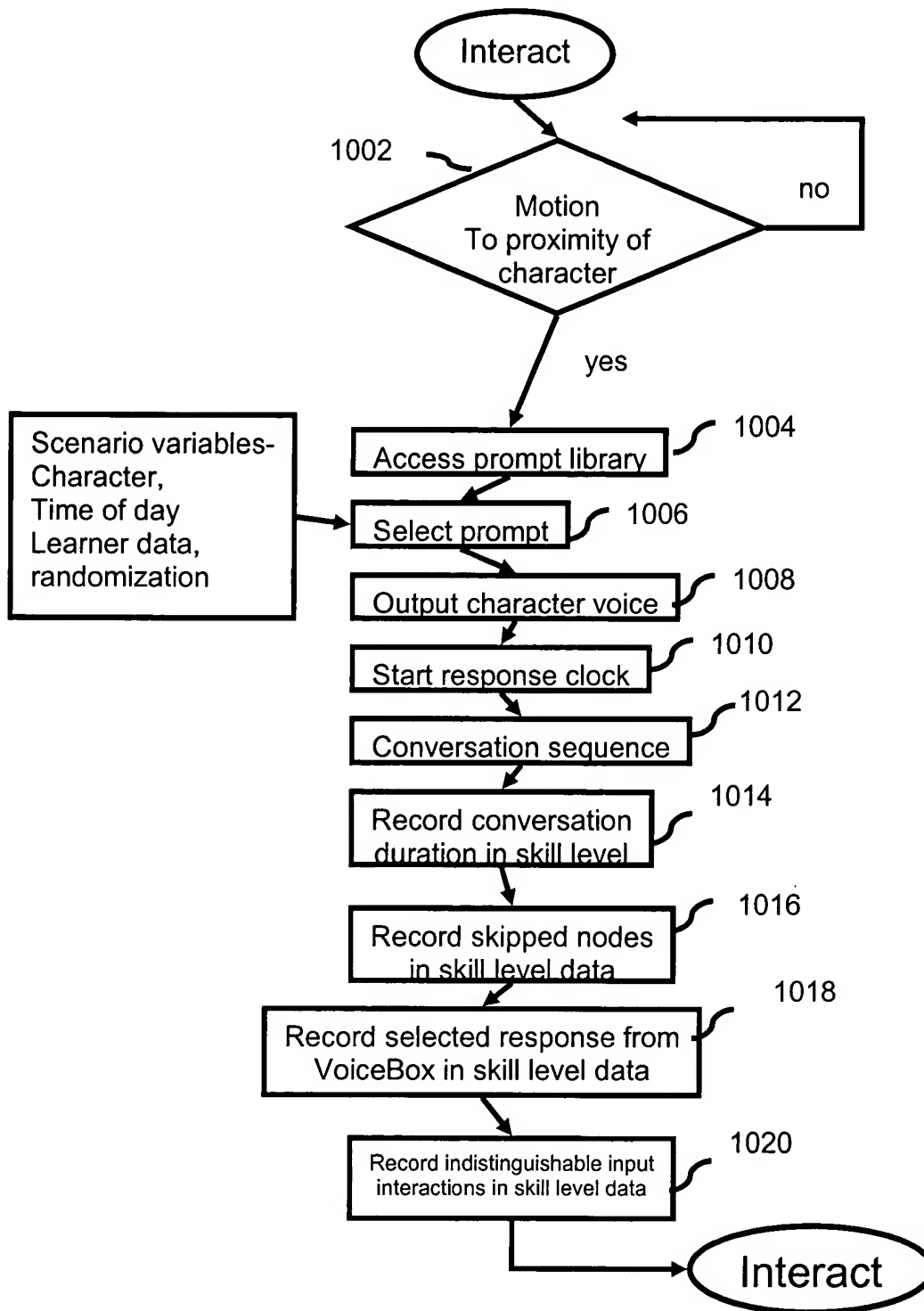interactions in skill level data — 1020

Interact

FIG. 10

METHOD AND SYSTEM FOR INTERACTIVE TEACHING AND PRACTICING OF
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Carlos says:

Lo siento, esta cerrado —66
I'm sorry, we're closed —68

— 62
— 70
— 60

You say:

Que tienda esta abierta? —66
What store is opened? —68
— 64
— 72

A que hora abren? —66
What time do you open? —68
— 64
— 72

Donde puedo ir? —66
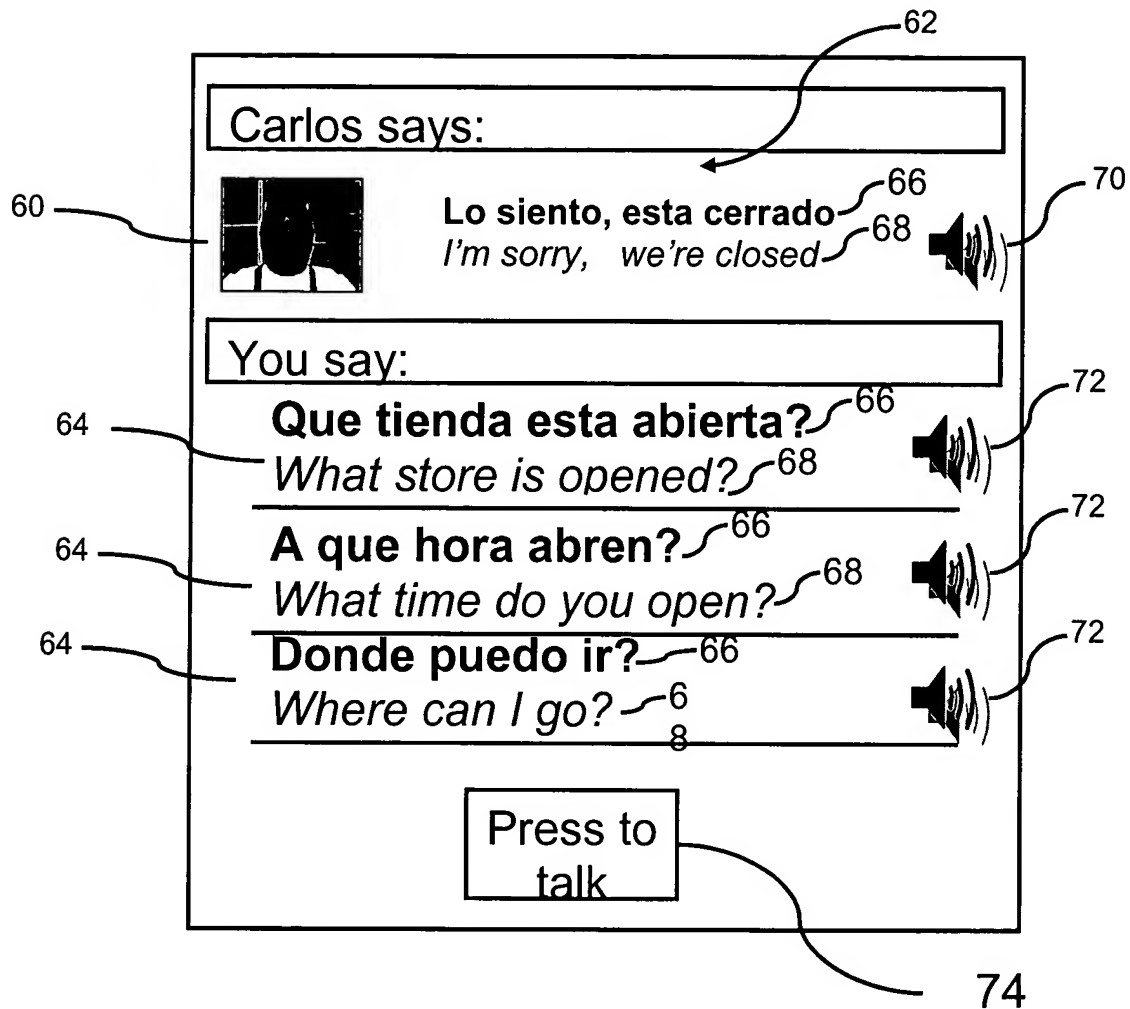Where can I go? —68
— 64
— 72

Press to talk
— 74

Fig 11

METHOD AND SYSTEM FOR INTERACTIVE TEACHING AND PRACTICING OF
LANGUAGE LISTENING AND SPEAKING SKILLS
Inventors: David Dunlap, Derek M. Koch, Douglas P. Whetter
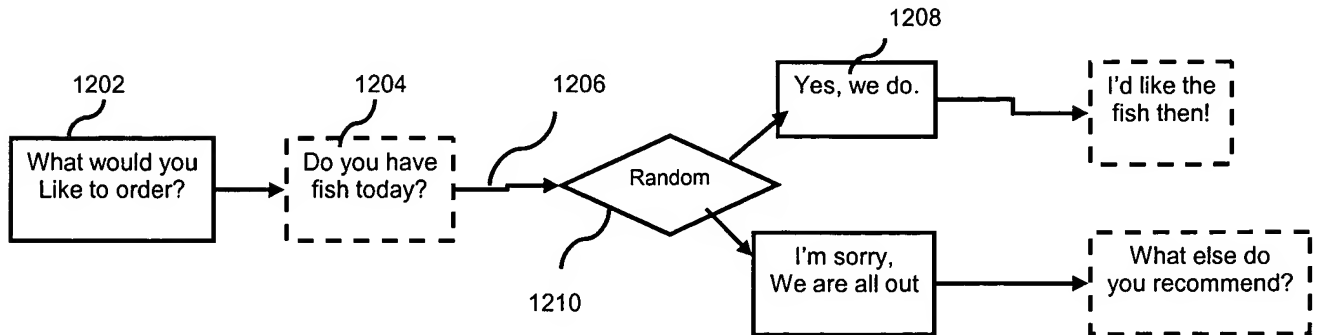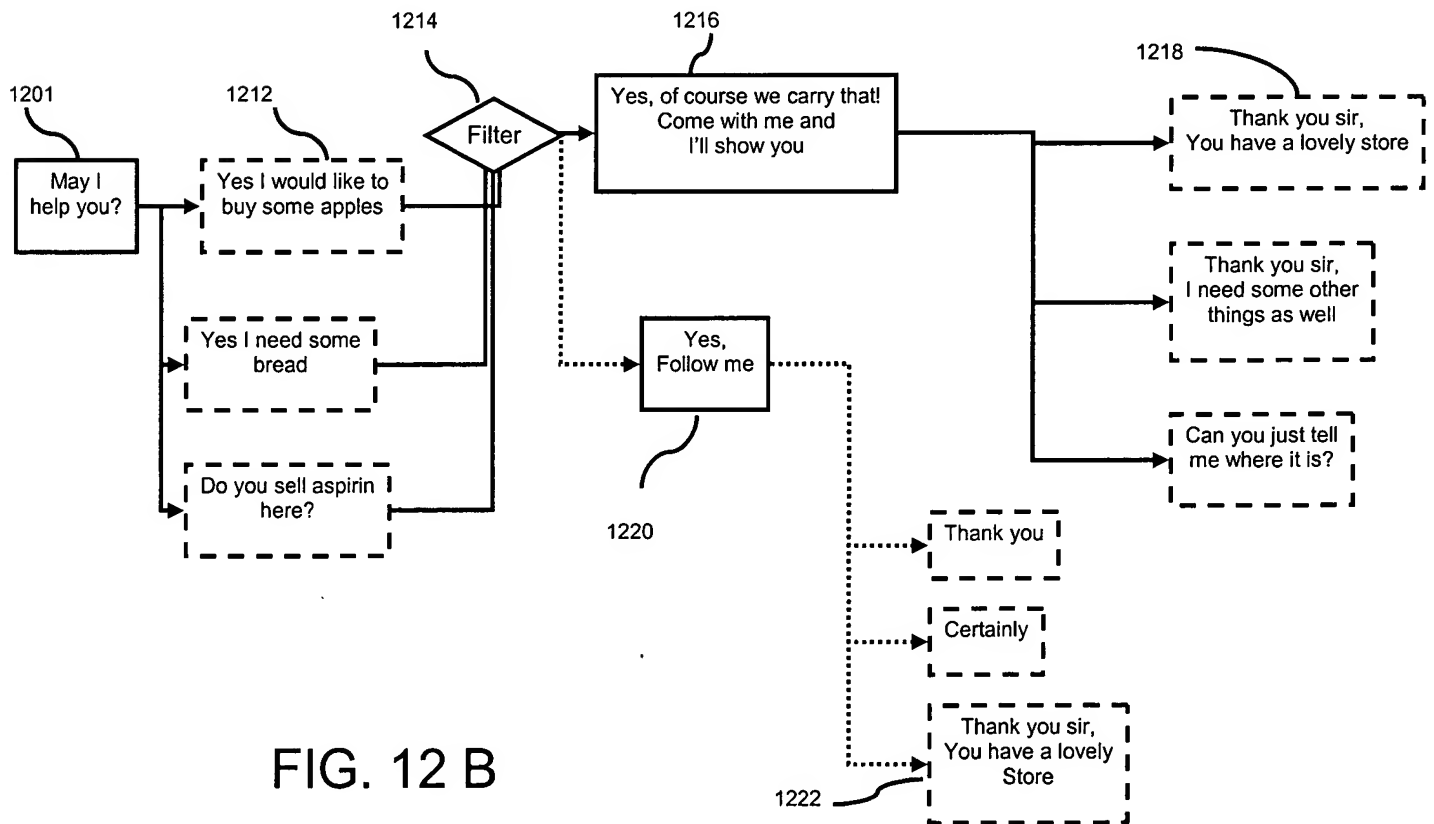Attorney Docket No.: C004 100104

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FIG. 12 A

FIG. 12 B

METHOD AND SYSTEM FOR INTERACTIVE TEACHING AND PRACTICING OF
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1220

1202

Yes, I would like
something to eat

Walk this
way please

Thank you

Great!

Hello, may I help you?

1212

Do you have a
smoking section?

Yes I am
very hungry

1224

"Indistinguishable" input

Yes, I would like
some dinner

May I
help you?

Yes

1226

No

Que?

1228

1230

Yes, please

Voice
Box

I'm sorry, I didn't
understand you.
Could you repeat that?

1232

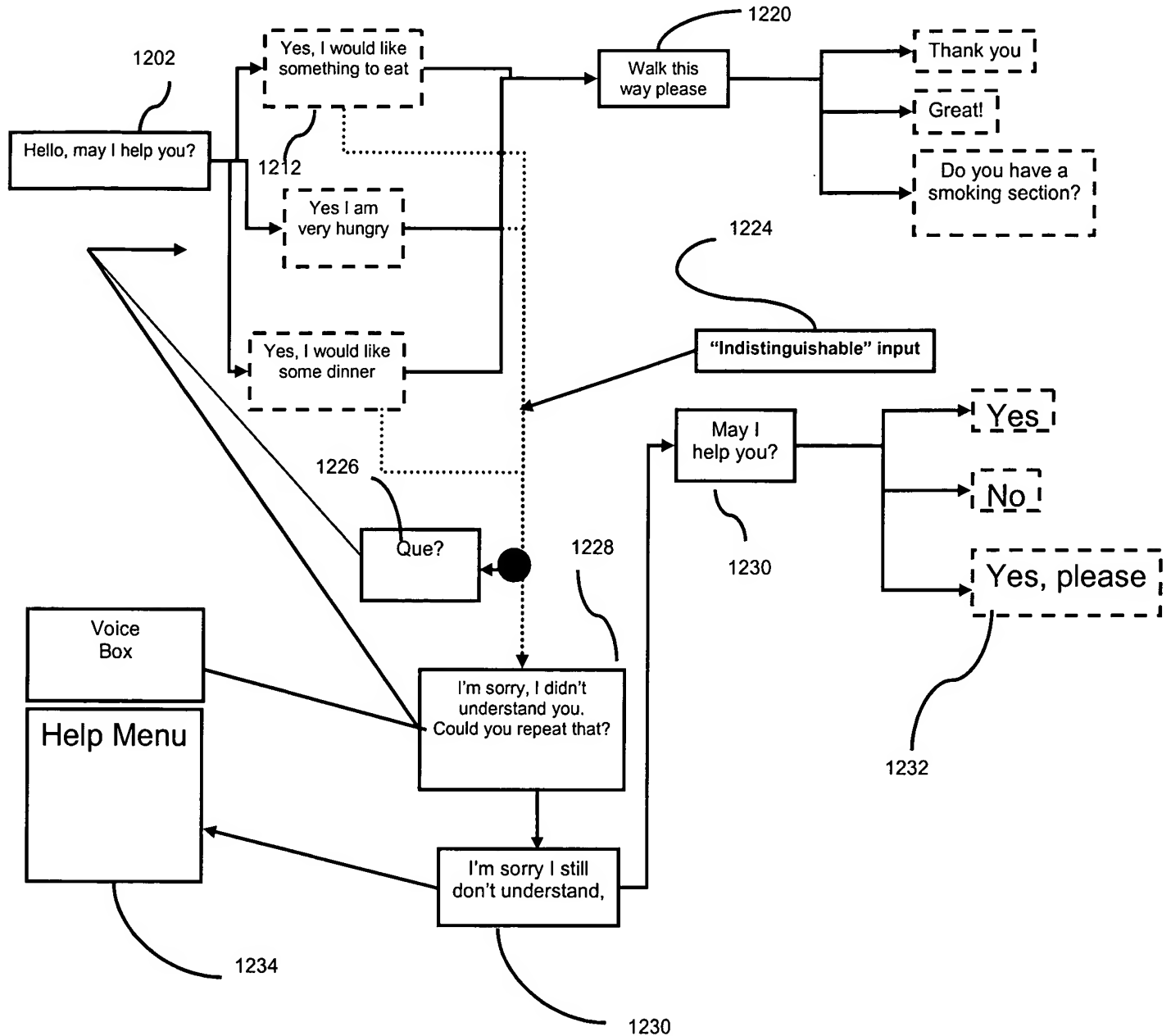Help Menu

I'm sorry I still
don't understand,

1234

1230

FIG. 12 C

METHOD AND SYSTEM FOR INTERACTIVE TEACHING AND PRACTICING OF
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Interaction node
Skill levels

78

92

| Speed of speech | | 80 | Vocabulary | | 86 | Response rate | |
Time	Value		% of words Recognized	Value		# of correct words %	Value
0-10 sec	100		100%	100		100%	100
11-20 sec	80		80-100%	80		80-100%	80
21-30 sec	60		60-80%	60		60-80%	60
>31 sec	30		< 60%	30		<60%	30

82

88

84

90

94

96

| Actual learner response at interaction node | | | | | |
Node #	SOS	Ave SOS	vocab	ave vocab	RR ave RR
N-4	80	80	100	100	60 - 60
N-3	60	70	100	100	80 - 70
N-2	60	66	80	93	60 - 66
N	100	76	80	90	80 - 70

98

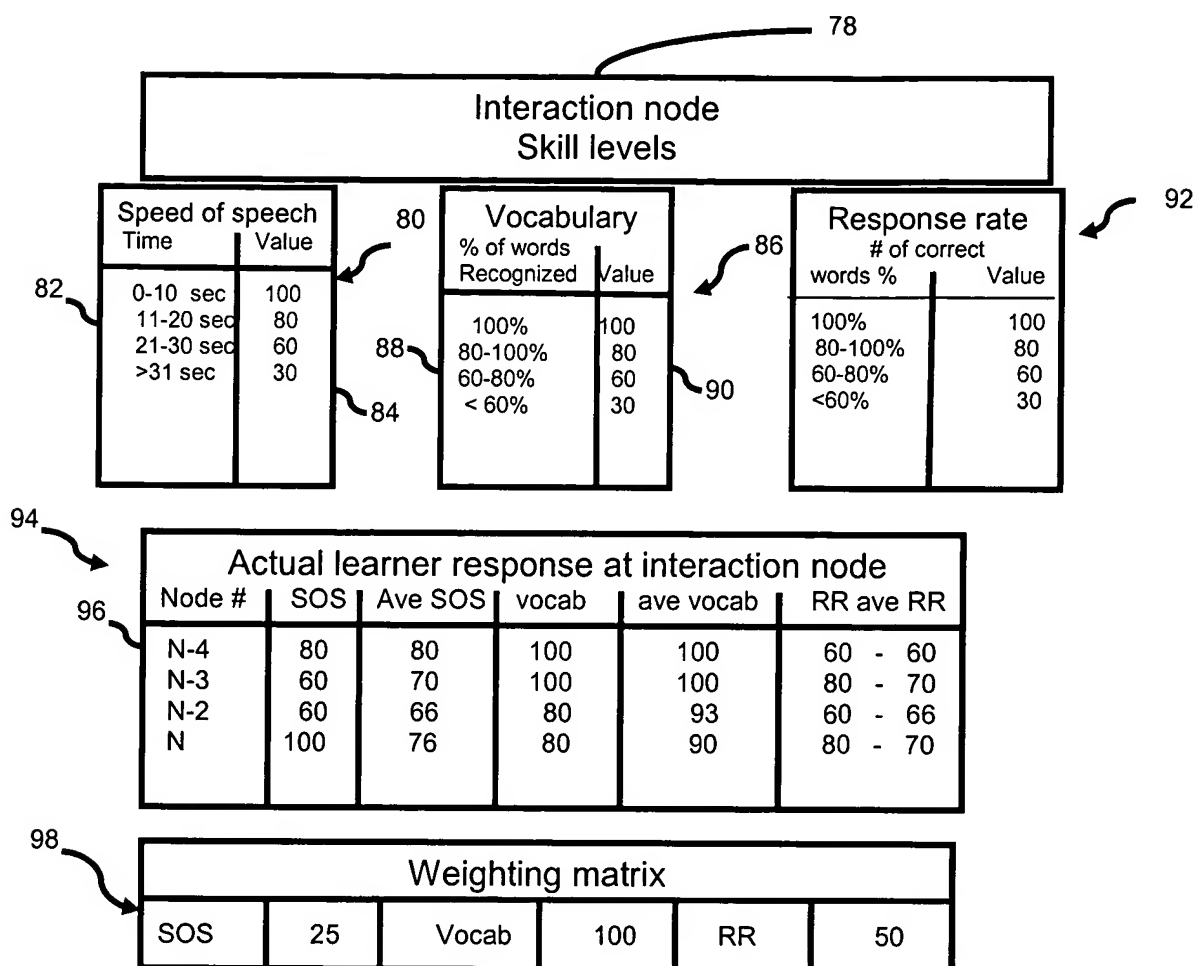| Weighting matrix					
SOS	25	Vocab	100	RR	50

FIG. 13

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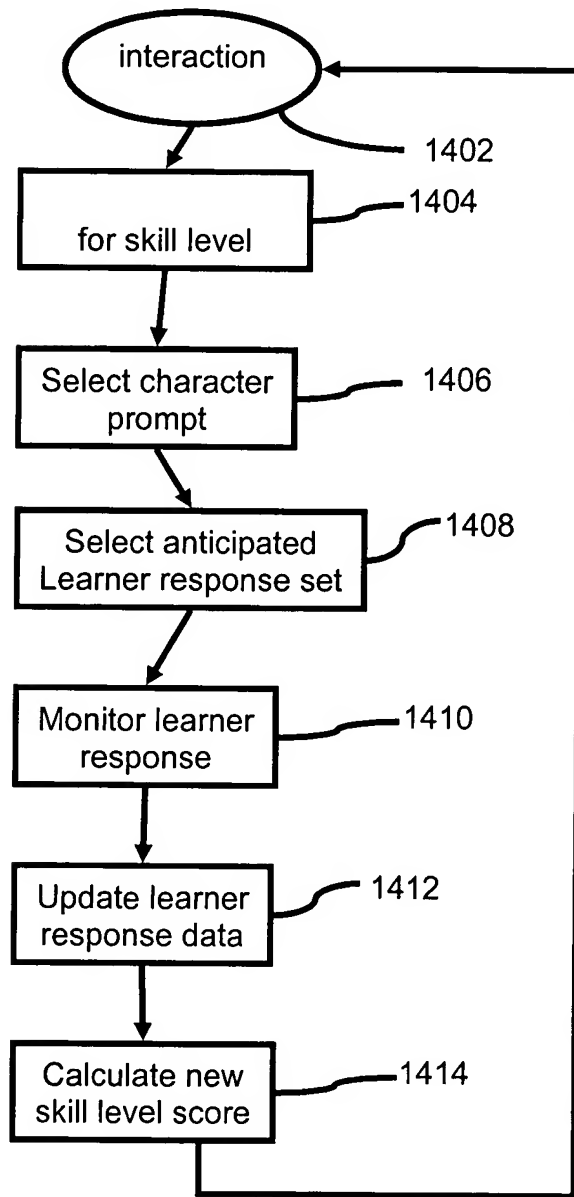Attorney Docket No.: C004 100104

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FIG. 14